CLAIMS

What is claimed is:

1. The digital half-duplex communication device, including:

a scalable digital vocoder;

a scalable channel coder; and

the scalable digital vocoder and the scalable channel coder being controlled by a supporting protocol that transmits predetermined digital audio quality and predetermined audio output bit rate information at regular intervals to the digital half-duplex communication device.

2. The digital half-duplex communication device of claim 1, wherein the predetermined digital audio quality and predetermined audio output bit rate information are transmitted by allocating extra bits in a reverse channel.

3. The digital half-duplex communication device of claim 1, wherein the communication device comprises a digital two-way radio.

4. A communication system, comprising:

a transmitting device providing a supporting protocol that transmits bit error rate (BER) information at regular intervals to a receiving device;

the receiving device, including:

a speech coder;

a channel coder; and

the channel coder and speech coder output bit rates are derived from the BER information.

5. A digital two-way radio, including:

a digital vocoder having a scalable output bit rate; and

an adaptive channel coder to adjust the output bit rate according to one of bit error rate and channel error conditions.

6. A method for coding audio in a two-way radio having a channel coder and a speech coder, including:

receiving an audio signal;

generating a variable speech bit rate and a variable channel bit rate; and

applying the variable speech bit rate and the variable channel bit rate to the channel coder and speech coder at regular intervals so as to approximate a predetermined relationship between audio quality and range.

7. The method of claim 6, wherein the step of applying further comprises:

applying the variable speech bit rate and the variable channel bit rate to the channel coder and speech coder at regular intervals so as to approximate a continuous linear relationship between audio quality and range.

8. The method of claim 6, wherein the step of applying further comprises:

applying the variable speech bit rate and the variable channel bit rate to the channel coder and speech coder at regular intervals so as to approximate a continuous stepped relationship between audio quality and range.

9. A method for coding audio in a two-way radio having a channel coder and a speech coder, comprising the steps of:

receiving an audio signal;

determining the bit error rate (BER) of the audio signal;

generating a variable speech bit rate and a variable channel bit rate from the BER;

scaling the speech coder with the variable speech bit rate;

scaling the channel coder with the variable channel bit rate; and

controlling the variable speech bit rate and the variable channel bit rate on the basis of bit error rate (BER) of the received audio signal.

10. A method for coding in a two-way digital radio, comprising the steps of:

receiving an audio signal at a vocoder;

scaling the vocoder output;

scaling a channel coder output based on the vocoder output;

controlling the output bit rate of the speech coder and channel coder on the basis of MER/BER information of the received signal;

transmitting quality requirement information to a transmitting device; and

generating scalable speech coder and channel coder frames.

11. A digital half-duplex radio, comprising a receiver receiving signaling frames containing a bit error rate (BER), the receiver utilizing the BER for selectively controlling a radio frequency (RF) power output and source coding bit rate for the digital radio.

12. A digital radio, comprising:

a receiver receiving signaling frames containing a bit error rate (BER), the receiver utilizing the BER for selectively controlling a radio frequency (RF) power output and source coding bit rate for the digital radio; and

when the source coding bit rate is selected:

the BER being mapped to generate speech coder and channel coder steps;

the radio further comprising:

a transmitter adjusting for forward error correction (FEC) and speech coding rate in response to the speech coder and channel coder steps; and

the receiver predicting the FEC and speech coding format from the BER sent in a previous reverse signaling frame.

13. A digital two-way radio, including:

a digital speech coder scaled to provide an audio quality that varies linearly with audio quality measurements computed at receiver end, the audio quality being mapped according to variable length channel coding and variable length source coding rate,

an adaptive channel coder having an adjustable output bit rate; and

a supporting protocol that transmits bit rate information at regular intervals to a supporting communication device.